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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/712,947

11/13/2003

Forrest Lee Wilson

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05/23/2006

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EXAMINER

SOMMERFELD, PAUL J

ART UNIT	PAPER NUMBER
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2168

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/712,947	Applicant(s) WILSON ET AL.	
	Examiner Paul J. Sommerfeld	Art Unit 2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to: See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/13/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities:

It appears that, due to a typographical error, the word "volume" was left out of the phrase "repeating the process on a logical volume by logical basis". The phrase should be replaced by --repeating the process on a logical volume by logical volume basis--.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 17-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 17 recites "a signal bearing medium", which is defined on page 13 of the specification of the invention as "including transmission media such as digital and/or analog communications links, which may be electrical, optical, and/or wireless".

Because carrier waves, being a form of electromagnetic energy, do not fall into one of

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the statutory categories of 35 U.S.C. 101, the claim includes non-statutory subject matter. A detailed explanation describing why carrier waves are regarded as non-statutory subject matter under 35 U.S.C. 101 follows:

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in § 101.

First, a claimed signal is clearly not a "process" under § 101 because it is not a series of steps. The other three § 101 classes of machine, compositions of matter and manufactures "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." 1 D. Chisum, Patents § 1.02 (1994). The three product classes have traditionally required physical structure or material.

"The term machine includes every mechanical device or combination of mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result." *Corning v. Burden*, 56 U.S. (15 How.) 252, 267 (1854). A modern definition of machine would no doubt include electronic devices which perform functions. Indeed, devices such as flip-flops and computers are referred to in computer science as sequential machines. A claimed signal has no physical structure, does not itself perform any useful, concrete and tangible result and, thus, does not fit within the definition of a machine.

A "composition of matter" "covers all compositions of two or more substances and includes all composite articles, whether they be results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids." *Shell Development Co. v. Watson*, 149 F. Supp. 279, 280, 113 USPQ 265, 266 (D.D.C. 1957), *aff'd*, 252 F.2d 861, 116 USPQ 428 (D.C. Cir. 1958). A claimed signal is not matter, but a form of energy, and therefore is not a composition of matter.

The Supreme Court has read the term "manufacture" in accordance with its dictionary definition to mean "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." *Diamond v. Chakrabarty*, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11, 8 USPQ 131, 133 (1931), which, in turn, quotes the Century Dictionary). Other courts have applied similar definitions. See *American Disappearing Bed Co. v. Arnaelsteen*, 182 F. 324, 325 (9th Cir. 1910), *cert. denied*, 220 U.S. 622 (1911). These definitions require physical substance, which a claimed signal does not have. Congress can be presumed to be aware of an administrative or judicial interpretation of a statute and to adopt that interpretation when it re-enacts a statute without change. *Lorillard v. Pons*, 434 U.S. 575, 580 (1978). Thus, Congress must be presumed to have been aware of the interpretation of manufacture in *American Fruit Growers* when it passed the 1952 Patent Act.

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A manufacture is also defined as the residual class of product. 1 Chisum, § 1.02[3] (citing W. Robinson, The Law of Patents for Useful Inventions 270 (1890)).

A product is a tangible physical article or object, some form of matter, which a signal is not. That the other two product classes, machine and composition of matter, require physical matter is evidence that a manufacture was also intended to require physical matter. A signal, a form of energy, does not fall within either of the two definitions of manufacture. Thus, a signal does not fall within one of the four statutory classes of § 101.

Claims 18-23 are rejected as being dependent upon rejected claim 17.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Atkin (U.S. Patent Number 6,145,066).

As to claim 1, Atkin teaches a computer system comprising a server adapted to interface with a plurality of data storage devices, said computer system configured to migrate computer data files from one of said data storage device as a source to a second data storage device as a target (see Abstract) by:

requesting data from a source volume on the source data storage device, as a bit image of a logical volume (col. 85 lines 4-7, indicating data is read from volumes cylinder-by-cylinder and track-by-track. Because entire tracks, which consist of nothing more than a sequence of bits, are read, data is read bit image.); and

outputting the data to a target volume and requesting the data to be written on the target data storage device as a bit image of the logical volume (col. 85 lines 4-5 and 9-10, indicating data is written to volumes cylinder-by-cylinder and track-by-track. Because entire tracks, which consist of nothing more than a sequence of bits, are written, data is written as a bit image.).

As to claim 9, Atkin teaches a method of migrating computer data files between a source data storage device and a target data storage device (see Abstract). For the remainder of the claim, Applicant is referred to the discussions and remarks made regarding claim 1 above.

As to claim 17, Atkin teaches signal bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing system to migrate data from a source data storage device to a target data storage device (see Abstract). For the remainder of the claim, Applicant is referred to the discussions and remarks made regarding claim 1 above.

As to claims 2, 10, and 18, Atkin teaches the computer system is adapted to request data on the source storage device as a bit image of a logical volume, cylinder by cylinder, track by track, and bit by bit (col. 85 lines 4-7, indicating data is read from volumes cylinder-by-cylinder and track-by-track. Because entire tracks, which consist of nothing more than a sequence of bits, are read, data is read bit-by-bit.), and to thereafter write the data to the target data storage device as a bit image of a logical volume, cylinder by cylinder, track by track, and bit by bit (col. 85 lines 4-5 and 9-10, indicating data is written to volumes cylinder-by-cylinder and track-by-track. Because entire tracks, which consist of nothing more than a sequence of bits, are written, data is written bit-by-bit.).

As to claims 3, 11, and 19, Atkin teaches the computer system is adapted to migrate logical volumes in accordance with a map file having source and target volume parameters (col. 12 lines 51-57, indicating a collection of session control parameters defining paired source and target volumes for migration).

As to claim 4, 12, and 20, Atkin teaches the logical volume comprises a physical volume (It is inherent that a logical volume comprises at least one physical volume. See the Wikipedia article supplied with this Office Action, entitled "Logical volume management", which explains that a logical volume is built from physical extents belonging to a physical volume.).

As to claims 5, 13, and 21, Atkin teaches the computer system is adapted to receive updates during migration (col. 11 line 61 through col. 12 line 2, indicating that updates occurring on source volumes during the migration process are reflected on target volumes).

As to claims 6, 14, and 22, Atkin teaches the computer system is further adapted to place a busy condition on the source volume after data migration (col. 14 lines 32-33, a QUIESCE is issued to the source volume, in which all I/O to the source volume is quiesced. Issuing a QUIESCE to a volume is equivalent to placing a wait condition on a volume, because both are performed in order to effectively deactivate a volume, so that I/O cannot be executed on the volume while the QUIESCE or wait condition is in effect.) and setting a SCSI ID to identify the target volume for access (col. 14 lines 39-40, cols. 55-56 lines 3-5, the target volume is made available for access by swapping the source and target volume labels.).

As to claims 7, 15, and 23, Atkin teaches the computer system is adapted to receive updates during migration by placing a busy condition on the source volume after data migration (col. 14 lines 32-33, a QUIESCE is issued to the source volume, in which all I/O to the source volume is quiesced. Issuing a QUIESCE to a volume is equivalent to placing a wait condition on a volume, because both are performed in order to effectively deactivate a volume, so that I/O cannot be executed on the volume while the QUIESCE or wait condition is in effect.), and setting a SCSI ID to identify the target

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volume for access (col. 14 lines 39-40, cols. 55-56 lines 3-5, the target volume is made available for access by swapping the source and target volume labels.), and repeating the process on a logical volume by logical basis, whereby a user accesses data from the source volume and moves off of it at substantially the same time (cols. 35-36 lines 10-21, indicating that the migration process proceeds on a volume-by-volume basis, such that after migration of a volume completes, migration of a next volume begins.).

As to claims 8 and 16, Atkin teaches said computer data files are accessible to an end user from either data storage device (col. 6 lines 64 through col. 7 line 1, indicating that during migration, complete write activity is provided to end users and applications).

Conclusion


5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- U.S. Publication 2003/0028737 A1, issued to Kaiya et al, for teaching a method of copying data from one logical volume to another.
- U.S. Patent Number 5,604,906, issued to Murphy et al, for teaching transferring a bit image from one logical volume to another.
- U.S. Patent Number 6356977 B2, issued to Ofek et al, for teaching an online, real-time data migration method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul J. Sommerfeld whose telephone number is 571 272-6545. The examiner can normally be reached on M-F 7:45 am - 4:15pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim T. Vo can be reached on 571 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TIM VO
PRIMARY EXAMINER